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# WHERE TO ESTABLISH JUNIOR COLLEGES

LEONARD V. KOOS
University of Minnesota

## THE PROBLEM AND THE METHOD OF STUDYING IT

The need for establishing junior colleges may still be open to question. What is presented here bears only upon the feasibility of instituting these new units. This problem of feasibility has two chief aspects, that of the source of the student body and that of adequately financing the work. We are concerned here only with the former aspect. The question upon which this study presumes to shed light may be put as follows: How large must be the enrolment of a high school and the population of the community which it serves in order that the school authorities may establish junior-college work with assurance that the requisite student body will be at hand to avail themselves of its opportunities?

The interdependency of the two aspects of the problem as stated—enrolment and finance—is frankly admitted, as is also the impossibility of saying the final word on the former without facts on the latter. This study, to have fullest significance, should be followed by one concerning costs. The aspect here studied is, however, deserving of separate investigation.

The data presented concern the enrolment in the first two years of higher institutions of the graduates of high schools in the North Central states. The facts were ascertained by means of a blank of inquiry directed to the principals of high schools in communities representing a wide range of population—from small villages to cities of good size. In addition, the selection included a large number of cities in which there are no colleges and a smaller number having such higher institutions. The latter were included in order to determine the influence of the presence of higher institutions on the proportions of high-school graduates likely to attend them.

The blank form called for the figures on enrolment during the academic year 1920–21 by years (first or second years of higher institutions only), by sex, and by line of work ("regular college work," pre-medic, pre-legal, the several engineering groups, architecture, dentistry, pharmacy, business, normal, education, agriculture, home economics, music, and other arts; blank spaces were provided for reporting the enrolment in other fields). Other data requested were the number in the high-school graduating classes of 1918–19 and 1919–20 and the enrolment of the high school (Grades IX–XII) in 1919–20. Principals were requested to report all their graduates "who are this year enrolled . . . . irrespective of the year of graduation from high school." For the purposes of the study a higher institution was defined as "one which requires for admission high-school graduation or its essential equivalent in earned units of credit."

TABLE I

DISTRIBUTION OF GRADUATES OF 82 HIGH SCHOOLS ENROLLED IN THE FIRST TWO YEARS OF HIGHER INSTITUTIONS

| LINE OF WORK | FIRST YEAR | | | SECOND YEAR | | | BOTH YEARS | | |
|---|---|---|---|---|---|---|---|---|---|
| | Men | Women | Total* | Men | Women | Total* | Men | Women | Total* |
| Liberal arts...... | 672 | 633 | 1,331 | 518 | 470 | 1,007 | 1,190 | 1,103 | 2,338 |
| Engineering...... | 183 | 2 | 198 | 157 | 5 | 172 | 340 | 7 | 370 |
| Architecture...... | 7 | 1 | 8 | 7 | ...... | 7 | 14 | 1 | 15 |
| Dentistry........ | 34 | 5 | 39 | 35 | 4 | 39 | 69 | 9 | 78 |
| Pharmacy........ | 11 | 1 | 12 | 9 | 2 | 11 | 20 | 3 | 22 |
| Business......... | 60 | 28 | 89 | 51 | 13 | 67 | 111 | 41 | 156 |
| Agriculture....... | 53 | ...... | 55 | 49 | 3 | 52 | 102 | 3 | 107 |
| Home economics.. | ...... | 35 | 35 | ...... | 28 | 28 | ...... | 63 | 63 |
| Normal.......... | 38 | 224 | 264 | 20 | 147 | 170 | 58 | 371 | 434 |
| Nursing.......... | ...... | 11 | 11 | ...... | 10 | 10 | ...... | 21 | 21 |
| Military and naval | 3 | ...... | 3 | 2 | ...... | 2 | 5 | ...... | 5 |
| Physical education | ...... | 6 | 8 | ...... | 1 | 1 | ...... | 7 | 9 |
| Music........... | 5 | 45 | 51 | ...... | 31 | 32 | 5 | 76 | 83 |
| Other arts........ | 6 | 19 | 26 | 5 | 11 | 16 | 11 | 30 | 42 |
| Miscellaneous.... | 7 | 2 | 10 | 6 | 3 | 9 | 13 | 5 | 19 |
| Total........ | 1,079 | 1,012 | 2,140 | 859 | 728 | 1,623 | 1,938 | 1,740 | 3,763 |

* The figures in this column are in some instances in excess of the sums of the figures in the pairs of columns immediately preceding because one school reported totals without dividing by sex.

As it was anticipated that only a small proportion of high schools would keep records of the sort needed to fill out the blank, some hundreds of the inquiries were sent out. Approximately a hundred containing data of some sort were returned, eighty-two of these from thirteen states proving usable. Illinois was represented by eleven schools, Indiana by eleven, Kansas by seven, Michigan by eight, Minnesota by eighteen, Ohio by ten, and Wisconsin by eight. The remaining schools were in neighboring states.

The first seven of the eight tables assembled from the data supplied, for reasons that will become apparent as the article proceeds, fall into three groups. Table I shows the distribution of all students enrolled in the first two years of higher institutions by line of work pursued, by sex, and by years; Tables II–V show the numbers and proportions in all lines of work in higher institutions by size of enrolment of high school, by size of graduating class, and by population of the communities in which the high schools are located. Tables VI–VII show the numbers and proportions in regular college work only by size of high-school enrolment and by population of community.

### A. DISTRIBUTION BY LINE OF WORK, YEAR OF WORK, AND SEX

A total of 3,763 of the graduates of the 82 high schools reporting are enrolled in the first two years of work in higher institutions—an average of about 46 per high school. This large number is seen in Table I to be widely distributed as to the lines of work being followed. "Liberal arts" as here tabulated includes those in "regular college work" as well as pre-medic, pre-legal, and education (not normal-school) students. This group is seen in Table I to be by far the largest, including 2,338 of the total. Of this number only 235 are in the three supplementary lines, the remainder being reported as taking "regular college work." The significance of this predominance of students in liberal arts for the problem in hand will be pointed out subsequently. The four other lines having more than a total of a hundred students are, in order, normal school, engineering, business or pre-business, and agriculture. The percentage distribution of the three main lines shown in a table omitted from this article indicates that liberal-arts work enrols 62.1 per cent, more than three-fifths of all students; engineering and normal work enrol 9.8 per cent and 11.5 per cent respectively; approximately one-sixth of the total, 16.5 per cent, are found in all remaining lines of work. Of all enrolled, 56.9 per cent are first-year and 43.1 per cent are second-year students. The division by sex for the whole group is nearly equal, although the proportion of men slightly exceeds that of women, the percentages being 52.7 for men and 47.3 for women. Very few women are reported for engineering and not a large proportion of men for normal work.

### B. THE ENROLMENT OF HIGH-SCHOOL GRADUATES IN ALL LINES OF WORK IN THE FIRST TWO YEARS OF HIGHER INSTITUTIONS

1. *As related to the enrolment of the high schools.*—The relationship to the total enrolment of the high schools of the enrolment of their graduates in the first two years of work in higher institutions irrespective of lines of work being pursued has been studied in two ways, represented in Tables II and III. In the former the high schools are grouped by size of enrolment, as 51–150, 151–250, etc. (horizontal classification), and by the number of their graduates enrolled in all lines of work in higher institutions (left-hand column). The figures in the second and remaining columns show the number of schools falling under each of the double classifications indicated. The striking feature of this table is the rather consistent drift of the distribution to larger numbers of students in higher institutions as we proceed from the smaller to the larger high schools. There is a spread of distribution, accentuated to some extent by the high schools in communities in which colleges or universities are located, but the trend is unmistakable. This interpretation is definitely borne out by the average numbers of such students shown in the lowest row of figures, which enlarge consistently from the groups of smaller high schools to the groups of larger ones.

The relationship found is given more definite measurement in Table III, for which the numbers enrolled in higher institutions have been reduced to percentages of the total enrolment of the high schools. In this table the high schools in communities in which there are no colleges or universities have been separated from those in which there are such institutions, so as to make possible a comparison of the two groups. The columns in this table setting forth the distribution for high schools in communities without higher institutions still give evidence of some tendency to divergence in proportions, but the averages at the foot of the columns and the distribution in the last column but one to the right both demonstrate the consistency pointed out in interpreting the preceding table. These averages range between 11.0 and 13.4 per cent. The distribution in the last column but one shows 42—almost two-thirds—of the 67 cases falling between the limits of 7.0–14.9 per cent.

### TABLE II

### Relationship between Total Enrolment of High Schools and the Numbers of Their Graduates Enrolled in the First Two Years of Work in Higher Institutions

| Number of Graduates Enrolled | Numbers of High Schools Classified by Size of Enrolment in 1919–20 | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | 51–150* | 151–250 | 251–350 | 351–450 | 451–550 | 551 and Over† | |
| 1– 10 | 4 | 2 | ...... | ...... | ...... | ...... | 6 |
| 11– 20 | 5 | 6 | 2 | 1 | ...... | ...... | 14 |
| 21– 30 | 2 | 3 | 4 | 1 | 2 | ...... | 12 |
| 31– 40 | ...... | 2 | 4 | 3 | ...... | ...... | 9 |
| 41– 50 | ...... | 3 | 3 | 3 | 1 | 1 | 11 |
| 51– 60 | ...... | 2 | 2 | 1 | ...... | 1 | 6 |
| 61– 70 | ...... | ...... | ...... | 1 | 5 | 1 | 7 |
| 71– 80 | ...... | ...... | ...... | ...... | 1 | 3 | 4 |
| 81– 90 | ...... | ...... | 1 | 2 | ...... | 4 | 7 |
| 91–100 | ...... | ...... | ...... | 1 | 1 | ...... | 2 |
| 101–110 | ...... | ...... | ...... | ...... | ...... | 1 | 1 |
| 111–120 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 121–130 | ...... | ...... | ...... | ...... | 1 | 1 | 2 |
| 131–140 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 141–150 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 151–160 | ...... | ...... | ...... | ...... | ...... | 1 | 1 |
| Number of high schools | 11 | 18 | 16 | 13 | 11 | 13 | 82 |
| Average number enrolled‡ | 13.8 | 27.7 | 37.6 | 51.2 | 65.2 | 86.8 | 45.9 |

* In two instances the high-school enrolment was less than 50.

† Four of the 13 high schools in this group reported enrolments of 551 to 650; 3, of 651 to 750; 3, of 751 to 850; and 1 each of 863, 914, and 1,023.

‡ The averages in this and succeeding tables were computed from the original and not from the tabular arrays.

The last column in this table shows the distribution of percentages for high schools in communities in which there are colleges or universities. Fifteen such communities are represented in the data assembled, 14 of them containing colleges and the remaining community containing a state university. Two of these communities also contain state normal schools, in one of which junior-college work is being offered. The influence of the presence of higher institutions on the percentages enrolled in them is apparent. In no instance does the percentage drop below the modal percentages for communities without local higher institutions, and nine of the cases are found to be higher than the mode. The average of the percentages for this group is 18.1, whereas the average for the group without local higher institutions is 11.9. This means that, on the average, the presence of a local higher institution adds approximately a half (52 per cent) to the proportion of high-school graduates who attend a higher institution—a fact of large significance where the question of the feasibility of the establishment of junior-college work is being considered.

TABLE III

PERCENTAGES WHICH THE NUMBERS OF GRADUATES OF HIGH SCHOOLS ENROLLED IN THE FIRST TWO YEARS OF HIGHER INSTITUTIONS ARE OF THE ENROLMENTS OF THESE HIGH SCHOOLS DURING 1919–20

| PERCENTAGE ENROLLED IN FIRST TWO YEARS | NUMBERS OF HIGH SCHOOLS IN COMMUNITIES WITHOUT COLLEGES CLASSIFIED BY SIZE OF ENROLMENT | | | | | | | NUMBERS OF HIGH SCHOOLS IN COMMUNITIES WITH COLLEGES |
|---|---|---|---|---|---|---|---|---|
| | 51–150 | 151–250 | 251–350 | 351–450 | 451–550 | 551 and Over | Total | |
| 3.0– 6.9 | 2 | 3 | 1 | 2 | 2 | ...... | 10 | ............ |
| 7.0–10.9 | 2 | 7 | 4 | 4 | 1 | 3 | 21 | 3 |
| 11.0–14.9 | 1 | 2 | 6 | 3 | 5 | 4 | 21 | 3 |
| 15.0–18.9 | 1 | 1 | 2 | 1 | 1 | 1 | 7 | 1 |
| 19.0–22.9 | 1 | 2 | ...... | 1 | 1 | ...... | 5 | 2 |
| 23.0–26.9 | ...... | 1 | ...... | ...... | 1 | ...... | 2 | 5 |
| 27.0–30.9 | 1 | ...... | ...... | ...... | ...... | ...... | 1 | 1 |
| Number of high schools | 8 | 16 | 13 | 11 | 11 | 8 | 67 | 15 |
| Average of percentages | 13.4 | 11.7 | 11.5 | 11.0 | 12.8 | 11.6 | 11.9 | 18.1 |

2. *As related to the numbers of graduates of high schools.*—Table IV presents a relationship somewhat similar to that just demonstrated, the difference being that, instead of showing the percentages

which those graduates enrolled in the first two years of higher institutions are of the high-school enrolments, it shows the percentages they are of the numbers of graduates in the last two classes of 1919 and 1920. This proportion will come very near being the proportion of these two graduating classes enrolled in the first two years of higher institutions, the difference here being that the heads of the schools, as has already been stated, were asked to report on all of their "graduates who are this year enrolled in the first two years in higher institutions, irrespective of the year of graduation from high school." Because of some inclination on the part of graduates of high schools to postpone attendance on higher institutions, it was felt that the number and proportion thus ascertained would be more pertinent to the problem of where to establish junior colleges than would the numbers and percentages that would be obtained on the basis mentioned above but not used.

TABLE IV

PERCENTAGES WHICH THE GRADUATES OF HIGH SCHOOLS ENROLLED IN THE FIRST TWO YEARS OF HIGHER INSTITUTIONS ARE OF THE TOTAL NUMBERS IN THE CLASSES GRADUATING IN 1919 AND 1920

| PERCENTAGE ENROLLED | NUMBERS OF HIGH SCHOOLS IN COMMUNITIES WITHOUT COLLEGES CLASSIFIED BY TOTAL NUMBER IN THE GRADUATING CLASSES OF 1919 AND 1920 | | | | | NUMBERS OF HIGH SCHOOLS IN COMMUNITIES WITH COLLEGES |
|---|---|---|---|---|---|---|
| | 1–50 | 51–100 | 101–150 | 151 and Over | Total | |
| 10.0–19.9...... | 3 | ......... | 1 | 1 | 5 | ............ |
| 20.0–29.9...... | 5 | 4 | 4 | ......... | 13 | ............ |
| 30.0–39.9...... | 1 | 6 | 4 | 2 | 13 | 1 |
| 40.0–49.9...... | 3 | 3 | 11 | ......... | 17 | 3 |
| 50.0–59.9...... | ......... | 3 | 2 | 4 | 9 | 2 |
| 60.0–69.9...... | 1 | 1 | ......... | ......... | 2 | 2 |
| 70.0–79.9...... | 1 | 2 | 2 | 1 | 6 | 4 |
| 80.0–89.9...... | 1 | 1 | ......... | ......... | 2 | 3 |
| Number of high schools. | 15 | 20 | 24 | 8 | 67 | 15 |
| Average of percentages.... | 37.4 | 45.8 | 38.0 | 47.1 | 44.6 | 62.6 |

The percentages for high schools in communities in which there are no local colleges range from 13.9 to 88.0. The averages for each of the groups of high schools, however, do not manifest a tendency to vary widely, ranging only from 37.4 to 47.1 per cent.

The last column but one shows the average of the percentages for these 67 high schools to be 44.6, and the mode to be 40.0–49.9 with rather large numbers of schools above and below this group. Forty-three cases—about two-thirds of all—lie between 20.0 and 49.9 per cent. The presence of local colleges (last column) again shows a marked influence, both on the distribution and on the average of the percentages, which is 62.6, or 18 per cent more for high schools in communities having such higher institutions within their borders. This is an increase of 40 per cent of the proportion enrolled from communities without local higher institutions.

3. *As related to the populations of the communities.*—A third relationship of significance is that of the numbers and proportions of the total populations of the cities represented by those of the high-school graduates who are enrolled in the work of the first two years in higher institutions. The figures on population are those of the 1920 census.

The striking feature of a table compiled but omitted here is analogous to that found in Table II. The drift of the distribution of students enrolled in higher institutions is rather consistently toward larger figures as we proceed from the smaller communities to the larger ones. Seven cities of fewer than 2,000 inhabitants have an average of 15 of their high-school graduates enrolled in the first two years of higher institutions; 14 cities of 2,000 to 4,000 have an average of 20 so enrolled; 12 cities of 4,000 to 6,000 have 39; 10 cities of 6,000 to 8,000 have 46; 12 cities of 8,000 to 10,000 have 51; 11 cities of 10,000 to 14,000 have 69; 14 cities of more than 15,000 inhabitants have an average of 73 graduates in the first two years of higher institutions. Eighty cities, then, show an average of 46 students in these years of advanced institutions. The range of distribution is wide, although somewhat increased because these figures do not distinguish between communities in which there are local colleges and others in which there are none.

A better measure of the relationship under consideration is provided in Table V, which presents the distribution when the proportion is expressed as the number in each 1,000 of the population of the community represented by those graduates of the high school enrolled in the first two years of higher institutions. There is a very clear mode in the distribution for all communities without local colleges as given in the last column but one. The averages for these columns also show a marked tendency to approximate each other except for the groups of largest and smallest communities represented. For the four groups with population figures lying between 2,000 and 10,000 these averages range only from 5.2 to 6.6 per thousand of the population. For the smaller communities the average is somewhat higher. On the other hand, the proportion declines appreciably in communities of 10,000 and over. This situation is in harmony with that found when proportions of the population enrolled in high schools have been computed, and seems, therefore, to be the result of the operation of similar social forces.

TABLE V

PROPORTIONS WHICH THE GRADUATES OF HIGH SCHOOLS ENROLLED IN THE FIRST TWO YEARS OF HIGHER INSTITUTIONS ARE OF THE POPULATIONS OF THE CITIES

| NUMBER IN EACH 1,000 OF THE POPULATION ENROLLED | NUMBERS OF CITIES WITHOUT COLLEGES CLASSIFIED BY SIZE OF POPULATION IN 1920 | | | | | | | | CITIES WITH LOCAL COLLEGES |
|---|---|---|---|---|---|---|---|---|---|
| | 0–1,999 | 2,000–3,999 | 4,000–5,999 | 6,000–7,999 | 8,000–9,999 | 10,000–14,999 | 15,000 and Over | Total | |
| 0.1– 3.0........ | ...... | 2 | 1 | 2 | 1 | 2 | 8 | 16 | ...... |
| 3.1– 6.0........ | 2 | 3 | 3 | 1 | 6 | 6 | 2 | 23 | 4 |
| 6.1– 9.0........ | 1 | 7 | 2 | 5 | 1 | 1 | ...... | 17 | 2 |
| 9.1–12.0........ | ...... | ...... | 3 | 1 | 1 | 1 | ...... | 6 | 2 |
| 12.1–15.0........ | 1 | ...... | ...... | 1 | ...... | ...... | ...... | 2 | 2 |
| 15.1–18.0........ | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 |
| 18.1–21.0........ | 1 | ...... | ...... | ...... | ...... | ...... | ...... | 1 | 1 |
| 21.1–24.0........ | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 24.1–27–0........ | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| 27.1–30.0........ | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 30.1–33.0........ | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 33.1–36.0........ | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| Number of communities..... | 5 | 12 | 9 | 10 | 9 | 10 | 10 | 65 | 15 |
| Average of the numbers in each 1,000 of the population | 10.1 | 5.8 | 6.5 | 6.6 | 5.2 | 4.6 | 2.4 | 5.5 | 12.5 |

Again, the distribution of the figures for communities in which there are higher institutions (last column) is toward the larger proportions; the average of the proportions is 12.5 in each 1,000 of the population. This is a difference of 7.0 per thousand in favor of the latter, or an increase of 127 per cent due to the presence of the local higher institution. In other words, the average proportion of the population enrolled in the first two years of higher institutions is much more than doubled by the presence of a local higher institution.

### C. THE ENROLMENT OF HIGH-SCHOOL GRADUATES IN THE FIRST TWO YEARS OF COLLEGE WORK

The numbers of graduates of high schools who are enrolled in higher institutions irrespective of the line of work being followed and the proportions these are of the high-school enrolment, of the graduating classes, and of the population, certainly have meaning for the problem of where to establish junior-college work. But it must be clear that a study of some of these same relationships for those in work more nearly of the "regular college" type will be even more pertinent. This is made more apparent if we bear in mind the fact that the work offered in almost all junior colleges, public and private, today adheres closely to the liberal-arts or regular college type. Liberal-arts courses, as has been shown, are also the dominant interest of those attending higher institutions.

The reader is reminded that in interpreting the remaining tables "college work" refers to that pursued by the liberal-arts group in Table I, although doubtless a small proportion of cases under certain other classifications might be understood as pursuing this type of work.

1. *As related to the enrolment of the high schools.*—The relationship between the more strictly collegiate enrolment and the enrolment in the high school has been canvassed in a manner identical with that used for the total enrolment in higher institutions irrespective of line of work pursued. A table omitted from this article shows in numbers of students the relationship between the total enrolment of high schools and the numbers of graduates in the first two years of college work. The number of graduates in these years of college tends to increase as one proceeds from the smaller high schools to the larger. Eleven small schools of 51–150 pupils have an average of 8 graduates in the first two college years;

18 schools of 151–250 have 14; 16 schools of 251–350 have 23; 13 schools of 351–450 have 34; 11 schools of 451–550 have 44; and 13 schools of more than 550 students have an average of 55 graduates enrolled in the Freshman and Sophomore years of liberal-arts work. The spread of the distributions is appreciably exaggerated by the fact that these figures do not distinguish between high schools in communities with local higher institutions and those without.

Table VI shows that, although there is considerable variation in the proportions who attempt college work, there is some approximation to agreement in them, especially for the high schools in communities without colleges. Thus, of the entire group of high schools in such communities (see last column but one), 40, or almost two-thirds of the group, range between 2.5 and 7.4 per cent. It is also to be noted that the averages of the percentages as given

TABLE VI

PERCENTAGES WHICH THE GRADUATES OF HIGH SCHOOLS ENROLLED IN THE FIRST TWO YEARS OF COLLEGE WORK ARE OF THE ENROLMENT IN THESE HIGH SCHOOLS DURING 1919–20

| PERCENTAGE ENROLLED | NUMBERS OF HIGH SCHOOLS WITHOUT COLLEGES IN THE COMMUNITIES CLASSIFIED BY SIZE OF ENROLMENT | | | | | | | NUMBERS OF HIGH SCHOOLS WITH LOCAL COLLEGES |
|---|---|---|---|---|---|---|---|---|
| | 51–150 | 151–250 | 251–350 | 351–450 | 451–550 | 551 and Over | Total | |
| 0.0– 2.4 | 1 | 4 | ...... | ...... | ...... | ...... | 5 | ...... |
| 2.5– 4.9 | 3 | 7 | 4 | 4 | 2 | ...... | 20 | 1 |
| 5.0– 7.4 | 1 | 3 | 4 | 4 | 3 | 5 | 20 | 3 |
| 7.5– 9.9 | ...... | 1 | 5 | ...... | 4 | 3 | 13 | 2 |
| 10.0–12.4 | 2 | ...... | ...... | 2 | 1 | ...... | 5 | 1 |
| 12.5–14.9 | 1 | 1 | ...... | 1 | ...... | ...... | 3 | 1 |
| 15.0–17.4 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 |
| 17.5–19.9 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 2 |
| 20.0–22.4 | ...... | ...... | ...... | ...... | 1 | ...... | 1 | 1 |
| 22.5–24.9 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| 25.0–27.4 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 27.5–29.9 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| Number of high schools | 8 | 16 | 13 | 11 | 11 | 8 | 67 | 15 |
| Average of percentages enrolled | 6.5 | 4.8 | 6.4 | 6.7 | 8.6 | 7.0 | 6.5 | 13.9 |

in the lowest row do not vary beyond the limits set by 4.8 and 8.6 per cent.

The percentages for high schools in communities with higher institutions vary more widely, but tend to be much higher. In fact, the average of this group of percentages is 13.9, or more than twice that of the average as shown in the preceding column. The presence of a local college on the average more than doubles the proportion of the graduates who pursue college work.

2. *As related to the populations of the communities.*—A table omitted from this article and Table VII present the situation by population of the cities in which the high schools are located. There is a decided tendency toward a larger enrolment in college

TABLE VII

PROPORTIONS WHICH THE GRADUATES OF HIGH SCHOOLS ENROLLED IN THE FIRST TWO YEARS OF COLLEGE WORK ARE OF THE POPULATIONS OF CITIES

| NUMBER IN 1,000 OF THE POPULATION ENROLLED | NUMBERS OF CITIES WITHOUT COLLEGES CLASSIFIED BY SIZE OF POPULATION IN 1920 | | | | | | | | CITIES WITH LOCAL COLLEGES |
|---|---|---|---|---|---|---|---|---|---|
| | 0–1,999 | 2,000–3,999 | 4,000–5,999 | 6,000–7,999 | 8,000–9,999 | 10,000–14,999 | 15,000 and Over | Total | |
| 0.0– 0.9 | 1 | 2 | 1 | 1 | ...... | ...... | 1 | 6 | ...... |
| 1.0– 1.9 | ...... | 2 | 1 | 2 | 2 | 4 | 6 | 17 | 1 |
| 2.0– 2.9 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 18 | 2 |
| 3.0– 3.9 | ...... | 3 | 1 | 1 | 2 | 3 | ...... | 10 | 1 |
| 4.0– 4.9 | ...... | 2 | 1 | ...... | 2 | ...... | ...... | 5 | ...... |
| 5.0– 5.9 | ...... | ...... | 1 | ...... | ...... | ...... | ...... | 1 | 1 |
| 6.0– 6.9 | ...... | ...... | ...... | 2 | ...... | ...... | ...... | 2 | ...... |
| 7.0– 7.9 | 1 | 1 | 1 | ...... | ...... | ...... | ...... | 3 | 2 |
| 8.0– 8.9 | ...... | ...... | ...... | 1 | ...... | 1 | ...... | 2 | 3 |
| 9.0– 9.9 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 10.0–10.9 | 1 | ...... | ...... | ...... | ...... | ...... | ...... | 1 | ...... |
| 11.0–11.9 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| 12.0–12.9 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| 13.0–13.9 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 14.0–14.9 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 15.0–15.9 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| 16.0–16.9 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 17.0–17.9 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| 32.1 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| Number of cities | 5 | 12 | 9 | 10 | 9 | 10 | 10 | 65 | 15 |
| Average of numbers in each 1,000 | 4.8 | 2.9 | 3.2 | 3.5 | 2.8 | 3.0 | 1.7 | 3.0 | 9.6 |

as cities increase in population. Seven cities of less than 2,000 have an average of 9 graduates in college work; 14 cities of 2,000 to 4,000 have 12; 12 cities of 4,000 to 6,000 have 24; 10 cities of 6,000 to 8,000 have 24; 12 cities of 8,000 to 10,000 have 31; 11 cities of 10,000 to 15,000 have 46; and 14 cities of over 15,000 people have an average of 46 high-school graduates in the first two years of college. It will be borne in mind that these data differ from the data of Table V in that the former refer only to college work in liberal arts. While there is a wide variation in the number of graduates enrolled for each population group—emphasized somewhat, it must be admitted, by the communities in which there are local colleges—the averages show a tendency toward increase according to the size of population. The averages of the numbers in each 1,000 (Table VII) of the population bear out this interpretation, since these proportions for all but the lowest and highest population groups range only between 2.8 and 3.5. In the smallest communities this proportion is exceeded considerably and in the largest it drops to 1.7. The last column but one shows that the proportions for 46, or more than two-thirds of the cases, range between 1.0 and 3.9 per thousand.

The proportions for communities containing colleges vary even more widely than those without but tend to be higher. The four lowest proportions in this last column are those from the four largest communities represented in this group. The average for this group of 15 communities is 9.6 in each 1,000, or, on the average, 3.2 times as large a proportion as is characteristic of communities without local colleges.

## APPLYING THE DATA PRESENTED TO THE PROBLEM IN HAND

*The standpoint assumed.*—Application of the findings so far presented will proceed with the assumption that the establishment of public junior colleges as parts of city school systems is under consideration. The facts presented have pertinence for the problem of establishing junior colleges under private as well as public auspices, but it simplifies the task of discussion to focus attention upon a single type of institution.

It will be taken for granted also that it is contemplated at first to offer only regular college work in liberal arts. The assumption is justified by the rather close adherence to this kind of work in the offerings of junior colleges already established. This is taken for granted despite the expectation that, if the junior-college experiment has enough fundamental need to give it a permanent place in our school system, enrichment and enlargement of the curriculum will be just as inevitable as was the extension of the high-school curriculum when forced by its popularization and democratization. The assumption is justified also by the large extent of domination of junior colleges by higher institutions which will be characteristic of the earlier period of development, just as was the case with our high schools until they came to be conceived as having purposes other than preparation for college work.

*The minimum junior-college student body.*—No definite number of students is generally accepted as a minimum to justify the institution and maintenance of junior-college work. To arrive at such a minimum will require much study of unit costs and of the size of classes, as well as a long period of experimentation with the new unit. However, we may accept as a tentative minimum the number chosen by the North Central Association, namely 50 students in both years, as the minimum for the association's standards for the junior college.

It is conceivable that provision might be made for two years of junior-college work with a single student in each year. However, this would not be found feasible under public auspices because of the extremely high cost per student. The feasibility increases with the number of students. In this sense, another test would be the minimum numbers to whom the work is now being given in public junior colleges which have been in operation through a period of years. The writer has at hand figures on enrolment during the current academic year in seven public junior colleges which have been in operation for some years. They are as follows: 32, 38, 54, 89, 101, 132, and 229. From this it appears that two communities after several years of experience find it practicable to provide the work for from 30 to 40 students. Data assembled by McDowell[1] show that for 12 public junior colleges with students enrolled in both years of work the median enrolment in 1916–17 was 57, and the enrolments in the six institutions below the median,

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[1] *Bureau of Education Bulletin No. 35, 1919*, pp. 132–34.

9, 12, 13, 22, 34, and 49. Of these, so far as can be ascertained, the first three and the fifth are no longer in existence. The fourth is being continued, this year with an enrolment of 32, as is also the last in the series. On the other hand, all the junior colleges at that time above the median are still in existence, with the exception of two which have been displaced in the city of their location by a branch of the state university. This evidence leads to the conclusion that a student body in both years of fewer than from 30 to 35 does not presage longevity for a junior college. A rough estimate of unit costs for adequate work will discover a strong factor of discouragement in such cases. A minimum enrolment of from 35 to 40 will therefore be used as a second test of feasibility.

*The size (a) of high-school enrolment and (b) of population assuring feasibility.*—(*a*) If it is assumed that the North Central Association standard should be applied, disregarding the possible increase in numbers enrolled that might result from starting a junior college in a community, there would be only a small proportion of the high schools considered in this study that would defend its establishment. The point of feasibility is not often reached even where there are at least about 500 high-school students, as only 3 of the high schools in the 351–450 group have as many as 50 graduates in the first two years of college work and only 2 in the 451–550 group. A situation very similar to this appears in that portion of Table VI presenting the distributions for communities without colleges. It is when the percentages for high schools in communities with colleges are used conservatively—and these have been pointed out as being more pertinent to our problem—that we find the necessary number of students appearing with a high-school enrolment of approximately 400. If the feasible minimum is set at 35 or 40 students, it may be seen that a high school with an enrolment of about 300 will be likely to supply the necessary student body.

*b*) Analogous application of these minima to Table VII leads to somewhat similar conclusions as to the proportion of communities in which the establishment of junior-college work is likely to be found practicable. That relatively few schools could attain the North Central Association standard of 50 students is borne out perhaps more emphatically by the distributions and average members in each 1,000 of the population in that portion of Table VII presenting the situation for communities without local colleges. However, the influence of the presence of a college in the community, demonstrated in the last column to the right, both in the distribution and in the average number in each 1,000, leads to the conclusion that the establishment of junior-college work would be feasible in many of the communities which this interpretation would place in the improbable group. Assurance is added to this conclusion from the fact that the four lowest proportions in this column are from the four largest cities represented in it, with populations ranging between 19,000 and 29,000. Here, as in the cities represented in the left-hand columns, the proportion tends to be greater in the smaller than in the larger cities.

The typical influence here shown leads to the expectation that the North Central Association standard as to numbers ought to be met in cities of 9,000 to 10,000 or more, and that the lower tentative standard here used (from 35 to 40 students) ought to be met in cities with populations of 6,000 to 7,000.

A study of the central tendencies in Table VIII, which gives the percentages of the populations of cities represented by those enrolled in high schools, will show that cities with a population of 9,000 to 10,000 are likely to have high-school enrolments approximating 400; and those with a population of 6,000 to 7,000 high-school enrolments approximating 300. This indicates a likelihood that the communities meeting the requirements of population as set will be identical with those having high schools with the requisite enrolment.

It may be gratuitous to emphasize the fact that the rough prediction here made is based for the most part on central tendencies and that in many particular situations deviation from it is to be anticipated. The variation evident in the figures in the tables must lead to the admission, for instance, that there will be some communities with populations of 10,000 or high schools with enrolments of 400 or more from which it will not be possible to recruit the minimum standard of 50 students for junior-college work. On the other hand, this same variation makes clear that there will be communities with much smaller populations and high schools with smaller enrolments where this minimum number may be secured. This variation should be looked upon as an admonition that those in charge of the school system should not attempt to institute junior-college work until they have carefully analyzed the local situation.

TABLE VIII

PERCENTAGES OF THE POPULATIONS OF THE CITIES ENROLLED IN HIGH SCHOOLS

| PERCENTAGE OF POPULATION ENROLLED IN HIGH SCHOOL | NUMBERS OF CITIES CLASSIFIED BY SIZE OF POPULATION IN 1920 | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|
| | 0–1,999 | 2,000–3,999 | 4,000–5,999 | 6,000–7,999 | 8,000–9,999 | 10,000–14,999 | 15,000 and Over | |
| 1.0– 1.9 | ...... | 1 | ...... | ...... | 1 | ...... | 2 | 4 |
| 2.0– 2.9 | ...... | ...... | ...... | 2 | 1 | ...... | 6 | 9 |
| 3.0– 3.9 | ...... | 1 | 1 | 2 | 4 | 6 | 4 | 18 |
| 4.0– 4.9 | 1 | ...... | 4 | 2 | 3 | 4 | 2 | 16 |
| 5.0– 5.9 | ...... | 1 | 3 | 3 | 3 | ...... | ...... | 10 |
| 6.0– 6.9 | 1 | 6 | 4 | 1 | ...... | 1 | ...... | 13 |
| 7.0– 7.9 | 1 | 2 | ...... | ...... | ...... | ...... | ...... | 3 |
| 8.0– 8.9 | 1 | 2 | ...... | ...... | ...... | ...... | ...... | 3 |
| 9.0– 9.9 | ...... | 1 | ...... | ...... | ...... | ...... | ...... | 1 |
| 10.0–10.9 | 2 | ...... | ...... | ...... | ...... | ...... | ...... | 2 |
| 11.0 | 1 | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| Number of cities | 7 | 14 | 12 | 10 | 12 | 11 | 14 | 80 |
| Average of the percentages | 8.5 | 6.1 | 5.3 | 4.2 | 4.0 | 4.0 | 2.8 | 4.8 |

*The possible total number of junior colleges.*—A query naturally arising after we have arrived at minima of high-school enrolment and of population of city likely to make the establishment of junior-college work feasible is this: What is the possible total number of junior colleges? A rough estimate may be made for the states represented by the data used in this study. In these states, according to the 1920 census, there are almost 300 cities with populations of 9,000 and over. As almost 100 of these cities already contain colleges or universities, there are approximately 200 cities in these states which could meet the standard of the North Central Association. A similar computation for cities of 6,000 and over shows a total of approximately 300 that would be able to meet the lower standard.

The estimates just made are given corroboration by estimates of the total number of communities in the same group of states having high schools with requisite enrolments, when such estimates are based on the data on enrolment rather than on population. Such data are at hand in *Bureau of Education Bulletin No. 19, 1920*, which reports by states on pages 19–20 the numbers of high schools by size of enrolment. According to this report there are in these states 310 high schools with enrolments of more than 400 students. In order to arrive at the number of communities having high schools of this size, it will be necessary to reduce this total by about 50 for the number of high schools in excess of one for each city in the largest cities having two or more high schools. The remainder will require reduction again by the approximate number of the communities in which these high schools are located in which there are also colleges or universities, approximately 85 or 90. This will leave about 175 or 180 communities having high-school enrolments of more than 400. This number is slightly less than that estimated from the populations only, but as the data on enrolment are for 1917–18, whereas the figures on population are for 1920, the discrepancy is doubtless compensated for by the increase in high-school enrolments during the intervening period.

An estimate similarly made for the lower standard shows somewhat less than 300 communities whose high-school enrolments are in a position to meet it, but the difference between this number and the estimate on population only would again be made up by the recent increase in high-school enrolments.

*Some related considerations.*—We are not warranted in assurance that typical proportions of a city's population or of its high-school enrolment will enter upon the work of a local junior college if any disturbing forces are at work. If the community or high school under consideration is near a higher institution enjoying prestige in the neighborhood, the proportions drawn to the junior college at first must be less than those indicated as likely to be typical. Some time must be allowed for popularizing the idea. Nor will the proportion attain the normal if fees that approach the prohibitive are required for attendance. What is prohibitive in this respect will vary somewhat from community to community.

There can be no reasonable doubt that the proportions of the population attending higher institutions as found and reported here are bound to increase. As all those conversant with the situation in secondary and higher education are aware, college attendance has been increasing rapidly through several decades. If junior colleges come at all commonly to find a place in our school system, even more rapidly increasing numbers and proportions of students will avail themselves of the opportunities afforded. This will be due in part to mere availability, as already indicated, to the public character of the institution, and to the tendency that must come to merge the two units of the school system. This increase will be accompanied by an enrichment of curricula in these years, and this in turn will also accelerate the increase. Consequently the point of feasibility for establishing junior colleges will tend to drop to smaller and smaller communities.

There will be some tendency for those high-school graduates who, under present conditions in which no kind of work on the collegiate level is provided in their communities, normally enter lines of work other than regular college work, e.g., engineering normal, etc., to shift to the line of work offered in the local junior college when it comes to be established. It is impossible to estimate the extent of such shifting. It will hardly come near the limits set by the contrasts of numbers and proportions shown in Tables II–V on the one hand and in Tables VI–VII on the other. But there will be enough of this shifting to add something to the assurance of the predictions of feasibility which have been made.

To date, the enrolment in junior colleges maintained as parts of city school systems is almost strictly from local sources. Such facts as the writer has at hand touching the source of the student body demonstrate that this enrolment is much more nearly local than is that of the first two years of private four-year colleges. While it appears, in a study made by the writer of the residential distribution of college students, that the percentages which the students from the local community are of the entire student body increase as the populations of the communities increase, the students in private colleges are far less exclusively from the cities of location. For this several factors must account, such as the novelty of the public junior college as contrasted with the prestige of a long-established private college, denominationalism, and the presence in its equipment of dormitory facilities which few, if any, public junior colleges provide. These factors will operate for some time to restrict the enrolment of public junior colleges from without the local community.

It seems reasonable to expect, however, that the public junior colleges will come to draw more largely than they have from outside the immediate community. While in some instances they have been established in connection with township and county high schools, they have been looked upon largely as very local institutions. It is not inconceivable that the state may come to foster these junior colleges as it is now supporting universities, establishing them to serve larger units of the population. With the popular acceptance of the junior-college idea and the provision of dormitory facilities the local character of the present attitude toward the junior college may break down, and in its place come an attitude not unlike that we now have toward private higher institutions.

Although the numbers and percentages of students drawn from outside the local community are larger for private colleges than for public junior colleges, there seems to be on the average no very marked difference between the number in each 1,000 of the population who come from within the community. The average of these proportions for 9 private colleges located in cities ranging in population from 15,000 to 72,000 is 3.3, with a range of 1.5 to 5.8, whereas the average for 7 public junior colleges in cities ranging in population from 13,000 to 138,000 is 3.0, with a range of 1.7 to 6.7.